

ABSTRACT

The invention is directed to a method and apparatus for phase-locking microdischarge device arrays and an ac, rf, or pulse-excited microdischarge. The invention provides output from a non-laser optical source that is a phase-locked array of microdischarges formed of microdischarge cavities containing discharge filler and excitation electrodes. In exemplary embodiments, entire arrays of microdischarge device optical emitters that are not lasers can be fabricated into a surface area having a largest dimension smaller than the coherence length of at least one of the emissions produced by the individual elements. In other embodiments, arrays of microdischarge devices configured in a Fresnel pattern constitute a lens suitable for both producing and focusing light.